

**APPENDIX 4-A****STORAGE OF FLUORSPAR****1. Description**

a. Fluorspar is a transparent to translucent mineral which may be almost any color, but is usually colorless. When acquired, it shall meet purchase specifications and grades as follows:

- (1) Metallurgical grade fluorspar - Purchase Specification P-69b-R3.
- (2) Fluorspar acid grade - (Hydrofluoric acid Grade A) - Purchase Specification P-69a-R2.
- (3) Fluorspar acid grade - (Cryolite Grade A) - Purchase Specification P-69a-R2.

2. *Packaging.* Metallurgical, acid and cryolite grades (filter cake and lumps) are received in bulk. Dry fines acid grade and dry fines cryolite grade may also be received in bulk. However, since protection of dry fines from moisture is imperative, this form of material may be received in bulk in well protected railroad equipment, or in paper sacks, fiber drums, steel drums (in some instances galvanized), or wood barrels.

3. *Marking.* Identification of new material shipped in bulk will be obtained from the DNSC-OL accompany the shipment and from shipping instructions issued by the DNSC-OL. When material is received in containers each container will be marked prior to receipt with government contract number, name of product, grade designation, and gross and net weights.

**4. Storage**

a. Metallurgical grades shall be stored on a well drained, smooth, improved surface of Type "B" or better.

b. Wet acid grade (filter cake), lump acid grade, lump cryolite grade, and wet cryolite grade (filter cake) shall be stored on a well drained, improved concrete surface of adequate bearing strength to prevent contamination of base material. Soil cement or black top may be used when conditions permit, and such surface is specifically authorized by DNSC-OL.

c. The drainage of any area selected for acid grade (filter cake) or cryolite grade (filter cake) is of particular importance and drainage should be provided from the center outward. A suitable curbing or intercepting shall be placed on the high side of the pile base to prevent water from washing against the base of the pile. To protect the filter cake from contamination piles will be grouted pursuant to specifications furnished by the DNSC-OL. Generally, grouting will be accomplished progressively as the piles are being built up. Particular type of surface required for the storage of the various grades of these materials will be indicated at the time allocations of space are made.

d. Material will be segregated into piles as indicated on shipping instructions issued by the DNSC-OL, at which time pile numbers will be assigned as required. In laying out storage area, location of piles shall

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be designed so that finished piles of dissimilar material shall be at least 25 feet from toe to toe. Commingling of material is not permissible without specific authorization.

- e. All piles of fluorspar in bulk shall be identified by appropriate signs. Temporary signs shall be provided by the storage facility showing name of material and pile number. When piles are completed, the DNSC-OL will furnish permanent signs showing name of material, pile number, and Ca F2 content.
- f. Dry fines acid grade and dry fines cryolite grade may be stored in bulk in steel tanks, closed bins, or, when received in containers as indicated above, in dry warehouse or shed space.
- g. Fluorspar in conventional steel drums, barrels and fiber drums shall be stored, in a warehouse, shed or other structure so as to protect containers from the weather. Material received in galvanized steel drums may be stored in the open on concrete runners when specifically authorized by the DNSC-OL.
- h. In every case, storage identity will be maintained by material identification cards (DNSC 41) reflecting lot, contract number, and identifying rows and tiers.
- i. When material is to be stored in a warehouse or shed, the first tier of containers shall be placed on floor pallets in upright position after which one-inch thick random length and width hardwood dunnage lumber shall be used between each succeeding tier. If the use of dunnage lumber between tiers is not practicable because of weight of containers or difficulty in handling, pallets between tiers may be used.
- j. When material in galvanized drums is designated for storage in the open, drums shall be stored on their side and stacked in cordwood fashion on concrete runners. Storage aids used to keep piles stable shall be on concrete. Use of cinder block is prohibited. Maximum stacking height of drums stored in open space will be four drums unless otherwise directed by the DNSC-OL.
- k. Whether stored in a warehouse, shed, etc., or in the open, containers shall be stored in uniform rows and tiers so as to facilitate the taking of an inventory at any time by counting the rows and tiers and computing the total quantity. Economical use of space must be given full consideration and all segregation and other requirements must be met. When pallets are used, a uniform number of containers shall be placed on each pallet. Odd number of containers will be placed on the top pallet of a stack completing the lot.
- 1. Warehouseman will mark the required identity data on the top of containers which are to be stored in a horizontal position designated for open storage.
- m. Material in paper sacks will be stored in box pallets in a dry warehouse. Segregation will be by grade and type.

***5. Precautions To Be Taken***

- a. *Health.* Dust should be minimized during receipt and/or outloading of this material.

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b. *General.* All fluorspar should be protected against contamination. This is especially important in the case of acid grade material.

6. *Average Storage Factor.* 17 net cubic feet per short ton for all grades.

FOR ADDITIONAL INFORMATION ON THIS COMMODITY REFER TO THE MATERIAL SAFETY DATA SHEET OR THE MOST RECENT PURCHASE SPECIFICATION.